



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/985,763	11/06/2001	Paul Kalapathy	108339-00097	4336
32294	7590	06/08/2006	EXAMINER	
SQUIRE, SANDERS & DEMPSEY L.L.P.			CHO, HONG SOL	
14TH FLOOR			ART UNIT	
8000 TOWERS CRESCENT			PAPER NUMBER	
TYSONS CORNER, VA 22182			2616	

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/985,763

Applicant(s)

KALAPATHY ET AL.

Examiner

Hong Cho

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. The following is in response to the amendments filed on 05/17/2006.

### ***Specification***

2. The disclosure is objected to because of the following informality:

The Applicant is required to provide the status (if patented or abandoned) of the applications cited on page 1.

### ***Claim Objections***

3. Claims 1, 2, 16 and 17 are objected to because of the following informalities:

Re claims 1 (line 4), 2 (lines 3 and 5), 16 (line 5) and 17 (lines 3 and 6),  
“configured to search” should read - - searching - - . This optional claim limitation,  
“configured to”, does not require the searches be actually done.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e) that form the basis for the rejections under this section made in this Office action:

Art Unit: 2616

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 4, 6-8, 10, 12, 13, 15-17, 19 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Michels et al (U.S 6453358), hereinafter referred to as Michels.

Re claims 1, 7, 13, and 16, Michels discloses a search device consisting of two binary search engines (*a search engine*) with a lookup table (*a table or an address resolution (ARL) table as in claim 17 having a plurality of entries*, figure 3, element 58; column 5, lines 39-40), a first stage memory (*a cache or ARL cache table as in claim 17*, figure 3, element 70) that does not contain the entire lookup table (*having a subset of entries of said plurality of entries of the table*, column 6, lines 5-10) where the first binary search engine (figure 3, element 66) is connected to a stage 1 memory (figure 3, element 70) and the second binary search engine (figure 3, element 68) is connected to a primary memory (figure 3, element 58) (*a search engine is connected to the table or ARL table as in claim 17 and the cache or ARL cache table as in claim 17*). The first binary search engine performs a predetermined number of iteration in searching a lookup table in stage 1 memory (*a search engine configured to first search said cache or ARL cache table as in claim 17*) and the second binary search engine performs binary search on a lookup table in primary memory based on the results from the first binary search engine (*and*

*then search said table or ARL table as in claim 17 based on search results of said cache, said search engine connected to said table and said cache, figure 3).*

Re claims 2, 8, and 17, Michels discloses a search engine with a first binary search engine (*a search stage zero segment*, figure 3, element 66) connected to a stage 1 memory (*cache*, figure 3, element 70) and a second binary search engine (*a search stage one segment*, figure 3, element 68) connected to a primary memory (*table*, figure 3, element 58) (*a search engine comprising a search stage zero segment configured to search said cache in said first number of search cycles, said search stage zero segment connected to said cache, and a search stage one segment configured to search said table in a second number of search cycles based on search results of said cache, said search stage one segment connected to said search stage zero segment and said table*, column 3, lines 9-16; figure 3; column 5, lines 33-36).

Re claims 4, 6, 10, 12, 15, 19, and 21, Michels discloses that the first binary search engine performs the first eight iterations of the search and the second binary search engine performs the last eight iterations (column 6, lines 2-5, *the first number of search cycles used to search the cache is equal to the second number of search cycles used to search the table*).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made

Art Unit: 2616

to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 5, 9, 11, 14, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Michels.

Re claims 3, 5, 9, 11, 14, 18, and 20, Michels discloses all of the limitations of the base claim, but fails to disclose that the first number of search cycles used to search the cache is less than the second number of search cycles used to search the table. Since Michels suggests that the binary search engines can perform any number of iterations depending on the particular application (column 6, lines 22-26), it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the number of iterations to search a lookup table at each search engine so that it will take less time for the binary search engine to search a lookup table with 256 entries than searching a lookup table with 64000 entries.

#### *Response to Arguments*

8. Applicant's arguments with respect to claims 1, 2, 4, 6-8, 10, 12, 13, 15-17, 19 and 21 have been considered but are not persuasive.

#### **Rejections under 35 U.S.C. 102(e)**

On page 4, applicant argues that Michels' two search engines do not search the cache and the table based on search results of the cache. In reply, Michels discloses a binary search engine (figure 3, element 66) searching a lookup table in a stage 1 memory

(column 6, lines 10-11) and passing the search results to a binary search engine (figure 3, element 68).

On page 5, applicant argues that Michels' two search engines are not a search engine. In reply, the two stages (figure 3, elements 66 and 68) constitute a search engine as claimed.

On page 5, applicant argues that Michels fails to disclose a search engine searching the cache in a first number of cycles and then searching the table in a second number of search cycles based on search results of the cache. In reply, refer to the rejection of claim 1.

On page 7, applicant argues that Michels is not proper prior art based on its filing date of September 6, 2000. In reply, Michels is a proper prior art with effective filing date of 1/23/1998.

Applicant further argues that the examiner did not use the best reference by indicating that Michels' patent (US 6161144) is better. In reply, applicant misunderstood the term, "best reference" since both references (US 6161144 and US 6453358) have the same disclosure.

On page 8, applicant's argument is irrelevant since both references have the same disclosure.

Applicant's arguments with respect to claims 3, 5, 9, 11, 14, 18, and 20 are moot in view of new ground of rejection.

*Conclusion*

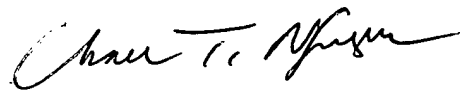
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Cho whose telephone number is 571-272-3087. The examiner can normally be reached on Mon-Fri during 7 am to 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hc

Hong Cho  
Patent Examiner  
6/2/2006



CHAU NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600